



High Performance Computing Software

JPL Internal Seminar Series

Complex Flows Simulations – Multidisciplinary Approaches

by
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JPL – Section 387

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198-109

Computational Fluid Dynamics (CFD) has matured both as an engineering discipline and as a trade. Nowadays the complexity of CFD simulations has reached realistic levels due to significant advances in modeling techniques and monotonically increasing computing power. However, simulation of combusting flows is still difficult – coupled turbulence and chemical phenomena along with complex geometries translates into stiff numerics and huge meshes. Several approaches which alleviate accuracy and efficiency problems of classical simulation methods will be presented: self-referenced simulations (dynamic modeling), in-situ adaptive tabulation, and neural-network controlled solver. Conceptually, these methods are not limited only to combustion applications, but to a wide range of numerical simulations of complex phenomena.

For questions, please contact Dan Katz at 4-7359